

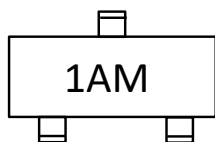
Small Signal Transistor

40V NPN
SOT23

Features

- Power Dissipation of 200mW
- Epitaxial Planar Die Construction
- High Stability and High Reliability
- Complementary PNP Type Available (MMBT3906)

Marking Information





"1AM" = Product Type Marking Code

Package Outline



SOT23 Top View

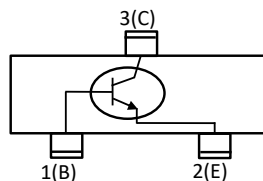
Mechanical Data

- Case: SOT23 Package
 - Case Material: "Green" Molding Compound UL Flammability Classification Rating 94V-0
 - Halogen Free
- Note: Products with logo  or  are made by HY Electronic (Cayman) Limited.

Ordering Information

- Package :SOT23
- Reel Size :7 (inches)
- Quantity Per Reel :3,000 pcs
- Quantity One Box :45,000 pcs
- Quantity One Carton :180,000 pcs

Device Schematic & PIN Configuration



Pin Assignment	
1	Base
2	Emitter
3	Collector

Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	60	V
Collector-Emitter Voltage	V_{CEO}	40	
Emitter-Base Voltage	V_{EBO}	6	
Collector Current-Continuous	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	625	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics(@TA = +25°C, unless otherwise specified.)

Parameter	Test Conditions	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage	$I_C = 10\mu A, I_E = 0$	$V_{(BR)CBO}$	60	-	V
Collector-Emitter Breakdown Voltage	$I_C = 1mA, I_B = 0$	$V_{(BR)CEO}$	40	-	
Emitter-Base Breakdown Voltage	$I_E = 10\mu A, I_C = 0$	$V_{(BR)EBO}$	6	-	
Collector Cut-Off Current	$V_{CB} = 60V, I_E = 0$	I_{CBO}	-	100	nA
Collector Cut-Off Current	$V_{CE} = 30V, V_{EB(Off)} = 3V$	I_{CEX}	-	50	
Emitter Cut-Off Current	$V_{EB} = 5V, I_C = 0$	I_{EBO}	-	100	-
DC Current Gain	$V_{CE} = 1V, I_C = 10mA$	$h_{FE(1)}$	100	400	
	$V_{CE} = 1V, I_C = 50mA$	$h_{FE(2)}$	60	-	
	$V_{CE} = 1V, I_C = 100mA$	$h_{FE(3)}$	30	-	
Collector-Emitter Saturation Voltage	$I_C = 50mA, I_B = 5mA$	$V_{CE(sat)}$	-	0.3	V
Base-Emitter Saturation Voltage	$I_C = 50mA, I_B = 5mA$	$V_{BE(sat)}$	-	0.95	V
Transition Frequency	$V_{CE} = 20V, I_C = 10mA, F = 100MHz$	f_T	300	-	MHz
Delay Time	$V_{CC} = 3V, V_{BE(Off)} = -0.5V$ $I_C = 10mA, I_{B1} = 1mA$	t_d	-	35	ns
Rise Time		t_r	-	35	
Storage Time	$V_{CC} = 3V, I_C = 10mA$ $I_{B1} = I_{B2} = 1mA$	t_s	-	200	
Fall Time		t_f	-	50	



Rating and Characteristic Curves

FIG.1 - Static Characteristic

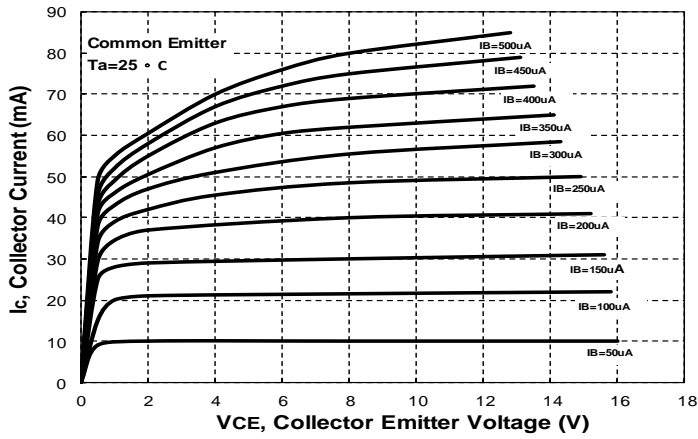


FIG.2 - hFE-Ic

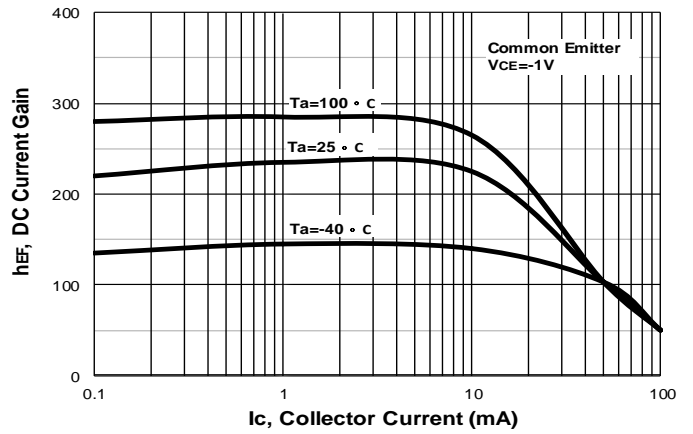


FIG.3 - VCEsat-Ic

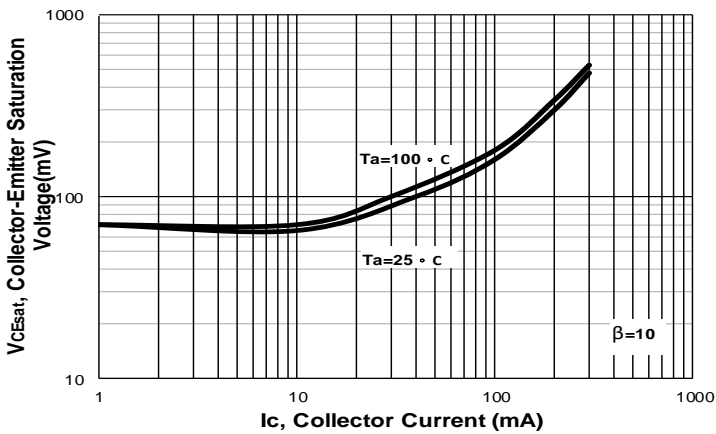


FIG.4 - VBEsat-Ic

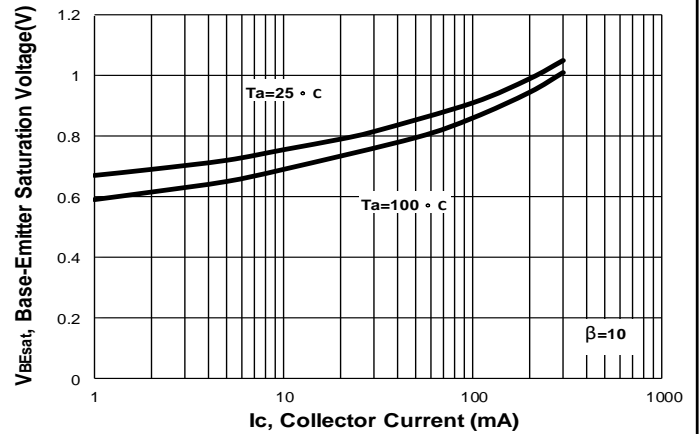


FIG.5 - Ic-VBE

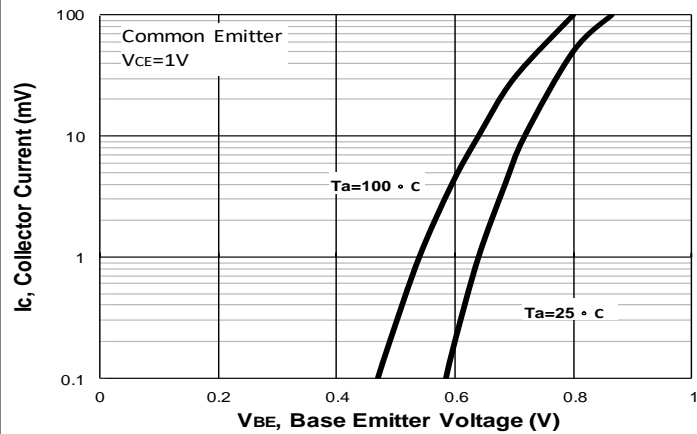
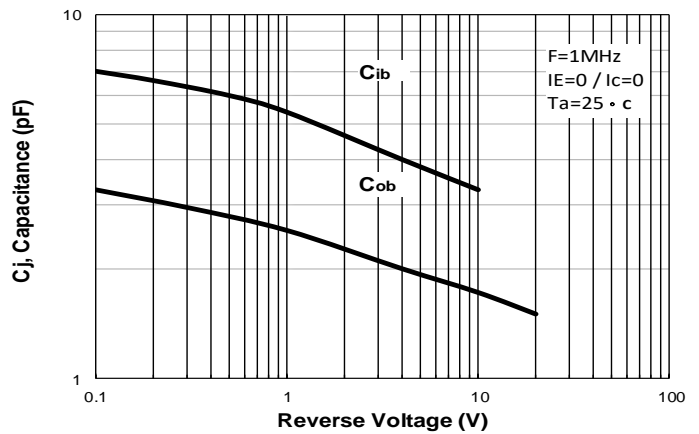
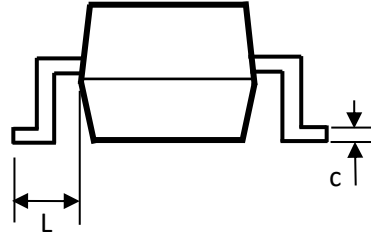
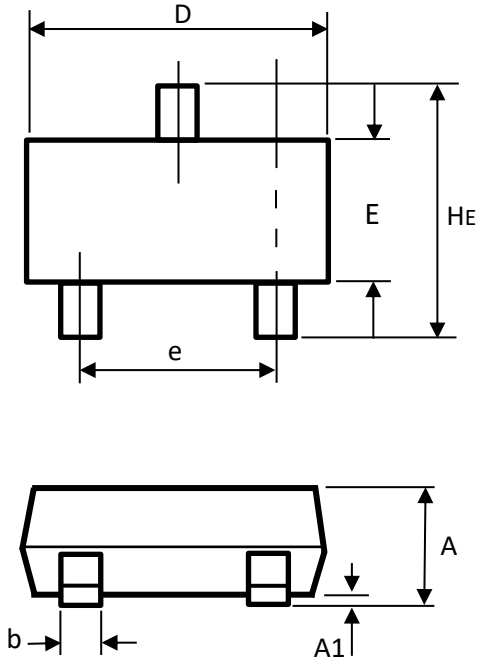


FIG.6 - Cob/Cib-VCB/VEB



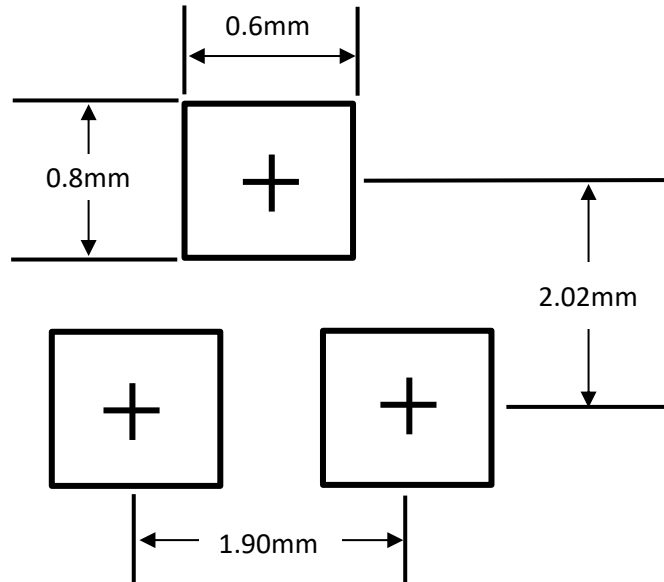


Package Outline Dimensions



SOT23 Package		
Dim	Min	Max
A	0.90	1.15
A1	0.00	0.10
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
e	1.80	2.00
L	0.55 REF	
HE	2.25	2.55
All Dimensions in mm		

Suggested Soldering Pad Layout



Note:

- 1. The pad layout is for reference purposes only.
- 2. General tolerance $\pm 0.05\text{mm}$



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